Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	WT Docket No. 04-435
to Facilitate the Use of Cellular	)	
Telephones and other Wireless Devices	)	
Aboard Airborne Aircraft	)	

COMMENTS OF SITA

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SUMMARY

SITA brings unique perspectives to this proceeding as a representative of the airline industry and an active participant in regulatory and technical groups in the United States and around the world that have been studying these issues. Given the global nature of the airline industry, SITA urges the Commission to take account of these activities so that a globally harmonized policy is developed in this proceeding.

SITA's primary concern has always been airline safety, and is pleased that both the Commission and the FAA are also now examining the onboard use of passenger handsets. SITA also believes that a key concern in this proceeding is the prevention of harmful interference to terrestrial wireless networks. SITA's approach to preventing harmful interference both to the aircraft's navigation and communications systems, as well as to terrestrial networks is the use of an onboard "picocell" that includes both a connectivity and a control function. Under this approach, the aircraft cabin is "electronically sealed," and handsets (as well as the picocell transceivers) operate at a minimum power because they only need to transmit to or from an antenna that will only be a few meters from the handsets.

SITA has designed such an onboard picocell system. Under SITA's system, the connectivity and control functions would be activated while the plane is above 10,000 feet/3,000 meters, the altitude above which the crew can become involved in non-critical functions. SITA's system uses satellite

links to connect the onboard picocell with the PSTN, SITA's terrestrial network and the Internet. Under SITA's proposed operations, the passenger would be treated as roaming onto the picocell, and connectivity would be provided if the picocell operator and the passenger's carrier had entered into a roaming agreement.

SITA believes that the Commission's proposal to allow passengers to use their handsets onboard aircraft in-flight will well serve the public interest, so long as such operations do not cause harmful interference to the airplane's navigation or communications systems, or to terrestrial wireless networks. The onboard picocells appear to meet this test. Use of the passenger's handset will facilitate two-way connectivity while the passenger is in flight, thereby providing additional peace of mind and enhancing economic efficiency. Moreover, market studies have indicated that there is a strong demand for this increased connectivity. To the extent that there are concerns about "noisy seatmates," there are marketplace and technological solutions so that all passengers' desires can be met.

With respect to a regulatory model, SITA contends that, in the case of a service provided on U.S-registered aircraft and for U.S. airlines, a secondary, non-exclusive fleet or blanket license issued to third-party operators is the only practical system that would work. Under this approach, individual aircraft would be registered into a database so as to facilitate investigation of any harmful interference. Given the dynamic movement of

the aircraft and the need to operate across multiple bands, tying the licensing to the territory being overflown is entirely impractical. Likewise, a spectrum lease approach would be difficult to implement. On the other hand, as a result of the controlled environment, the onboard picocell would be "invisible" to terrestrial networks, while making possible extension of service to subscribers via roaming, producing a "win-win" for the picocell operators and the terrestrial carriers. Because the licenses would be non-exclusive, auctions would not be appropriate.

In the case of a foreign airline, SITA believes that the Commission should recognize a license issued by the home country of the airplane without requiring a separate FCC license, although registration with the database would remain appropriate and the operator would still have to comply fully with all of the Commission's technical requirements for onboard picocell systems for the purpose of preventing harmful interference to terrestrial networks and eliminating health concerns. Such treatment derives from Articles 30 and 33 of the Chicago Convention and Commission Rules implementing that treaty, and is also consistent with Article 18 of the ITU Radio Regulations. Requiring a license from the Commission in addition to one from the State of Registry of the aircraft would be inconsistent with the current treatment of the State of Registry as the regulatory body with ultimate sovereignty and control over the airplane, and risks triggering reciprocal obligations on U.S.-registered aircraft when they fly over other

countries.

Once the absence of risk of harmful interference to an aircraft's navigation and communications systems and to terrestrial wireless carriers is established, SITA urges the Commission to adopt regulations to permit non-exclusive licenses pursuant to minimally burdensome procedures as described in these comments. SITA believes that such a decision would well serve the public interest.

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SITA (Societe Internationale de Telecommunications Aeronautiques) hereby comments on the Federal Communications Commission's ("Commission") Notice of Proposed Rulemaking concerning the use of passengers' wireless devices onboard aircraft in flight.[1] SITA supports the Commission's efforts to expand customers' options for onboard communications capabilities. SITA believes that technologies have been developed that will allow passengers to use their own handsets to make and receive calls on aircraft in flight. Market research indicates that there is strong demand for such connectivity. Equally important, the onboard systems proposed by SITA also incorporate functionalities to control the

[1] *Amendment of the Commission's Rules to Facilitate the Use of Cellular Telephones and other Wireless Devices Aboard Airborne Aircraft*, 20 FCC Rcd 3753 (2005), published in the *Federal Register* March 10, 2005 (hereafter cited as "*Notice*").

passengers' handsets and the cabin environment to prevent harmful interference to the airplane's navigation systems and to terrestrial wireless services. As detailed in these comments, SITA urges the Commission to amend its Rules to permit the use of cellular handsets and other wireless devices onboard airplanes in a controlled manner once the Commission, working in conjunction with the Federal Aviation Administration ("FAA"), are both satisfied that such operations pose no risk of harmful interference to the aircraft's navigation or communications systems, or to any terrestrial wireless services.

I. Introduction

SITA has long served global aviation and related industries. SITA is unique in being owned by the industry, as well as in aiming to provide innovative and community-focused solutions that offer the industry greater cost-effectiveness virtually anywhere in the world. SITA is the world's leading provider of global Information Technology and Telecommunications solutions to the air transport and related industries. With over 50 years of experience, SITA offers:

- A portfolio of information technology and telecommunication services specifically for the air transport industry.
- Global reach based on local presence, with services for over 600 members and around 1,800 customers in over 220 countries and territories.

- Services to airlines, airports, aerospace companies - organizations involved in aircraft design and communication - as well as logistics and travel distribution organizations, international organizations and governments.

- Information Technology and Telecommunications solutions at virtually every step of the journey, from reservation, web booking and ticketing, through check-in, baggage tracking, immigration and border control solutions, to departure control, flight operations, in-flight communications, and much more.

Of particular relevance to this proceeding, SITA recently formed OnAir™, a joint venture to expand its in-flight offerings. SITA INC (the commercial arm of SITA), Airbus and Tenzing have teamed to form a new company that will enable airlines to equip their aircraft cost effectively with a full suite of personal communications services for passengers. Passengers will be able to keep in touch via their own mobile phones, laptops and Personal Digital Assistants ("PDAs") during flights. SITA is thus highly interested in this Commission proceeding.

Moreover, SITA's interest in these issues is also longstanding. SITA introduced passenger air-to-ground communications services via satellite in response to a requirement from its members to do so in the early 1990's. Those services were introduced in the United States in the late 1990's.[2] SITA

[2] *Comsat Corporation d/b/a Comsat Mobile Communications, Application for Authority under Section 753(c) of the International Maritime Satellite Act and Section 214 of the Communications Act of 1934, as amended*, 16 FCC Rcd 21661 (2001).

also participated in the Commission's previous proceeding examining air-to-ground service in which the cellular handset restriction had been raised as an issue.[3] SITA views the potential new services that may become available as a result of this proceeding as an evolution of these previous passenger services.

In addition to the Commission, other regulatory bodies and technical groups have been examining these issues and SITA has been active in those regulatory and technical proceedings as well. This includes work being done by the FAA[4] and RTCA, Inc. ("RTCA")[5] in the United States, as well as EUROCAE in Europe,[6] which are examining technical issues concerning

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[3] *Amendment of Part 22 of the Commission's Rules To Benefit the Consumers of Air-Ground Telecommunications Services; Biennial Regulatory Review--Amendment of Parts 1, 22, and 90 of the Commission's Rules*, *Notice of Proposed Rulemaking*, WT Docket No. 03-103, 18 FCC Rcd 8380 (2003). In that proceeding, SITA filed Comments and Reply Comments. See Comments of SITA, WT Docket No. 03-103, filed September 23, 2003; Reply Comments of SITA in WT Docket No. 03-103, filed October 23, 2003.

[4] *See, e.g.*, *Notice* at ¶ 9.

[5] RTCA, Inc. is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management (CNS/ATM) system issues. RTCA functions as a Federal Advisory Committee. Its recommendations are used by the FAA as the basis for policy, program, and regulatory decisions and by the private sector as the basis for development, investment and other business decisions. SC-202 of RTCA is currently addressing the issue of potential interference from portable electronic devices, including cell phones and wireless PDAs. *See* http://www.rtca.org/comm/sc202.asp.

[6] The European Organisation for Civil Aviation Equipment (EUROCAE) was formed in 1963 to provide a regular forum in Europe where administrations, airlines and industry could meet to discuss technical problems. Today, EUROCAE documents are considered by the European Aviation Safety Agency (EASA) as means of compliance with Technical

harmful interference to aircraft. SITA is actively involved in regional regulatory groups, such as the ECC/CEPT[7] in Europe and the Asia-Pacific Telecommunity ("APT") in Asia,[8] which are examining the appropriate

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Standard Orders and other regulatory documents. The main European administrations, aircraft manufacturers, equipment manufacturers and service providers are members of EUROCAE, and they actively participate in the Working Groups which prepare these documents. WG-58 is studying EMC issues related to the use of new technology passenger electronic devices ("PEDs") on aircraft. *See*, http://www.eurocae.org/cgi-bin/home.pl?Target=php/workgroup.php%3Fver%3Dva&Num=2.

[7] The European Conference of Postal and Telecommunications Administrations - CEPT - was established in 1959, and now consists of 46 member countries. Although the original members were the incumbent monopoly-holding postal and telecommunications administrations, in conjunction with the European policy of separating postal and telecommunications operations from policy-making and regulatory functions, CEPT became a body of policy-makers and regulators. CEPT now plays an important role in the development of telecommunications regulatory policy in Europe by, *inter alia*: establishing a European forum for discussions on sovereign and regulatory issues in the field of post and telecommunications issues; exerting an influence on the goals and priorities in the field of European Post and Telecommunications through common positions; promoting and facilitating relations between European regulators (*e.g.* through personal contacts); influencing, through common positions, developments within ITU in accordance with European goals; giving its activities more binding force, if required, than in the past; and creating a single Europe on posts and telecommunications sectors. The CEPT website is at: http://www.cept.org/.

[8] Established by the Joint initiatives of the United Nations Economic and Social Commission for Asia & the Pacific – UN ESCAP and the International Telecommunication Union (ITU), the APT is a unique organization of Governments, telecommunications service providers, manufactures of communication equipment, research and development organizations and other stake holders active in the field of communication and information technology. The APT now has 33 Members, 4 Associate Members and 100 Affiliate Members. Through its various programs and activities, APT has made a significant contribution to the growth of the ICT sector, especially the telecommunications sector in the Asia Pacific region.

licensing regimes for these services. In addition to working with regional regulatory groups, SITA also has been in regular contact with national regulators with regard to the use of passengers' handsets onboard aircraft in flight. SITA recognizes that the use of passengers' handsets onboard aircraft raises both technical and legal issues that will need to be addressed on a harmonized basis, particularly in light of the international nature of the airline industry.

SITA is a member of both EUROCAE and RTCA, and as a sector member of the ITU has actively participated in ECC/CEPT. SITA has also actively participated in the APT proceedings as an Affiliate Member. In addition, SITA is working with several other groups that are undertaking or reviewing technical studies to ensure an unbiased analysis of the impact of onboard picocell operations on terrestrial wireless networks. These other entities include study groups under the auspices of 3GPP.[9] Likewise, SITA's

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The issue of airborne mobile base transceivers (pico-cells) is being addressed by APT. *See, e.g.*, http://www.aptsec.org/meetings/2005/apg07-2/AWFInterim%20Meeting%20Documents/(37Rev.2)FrameworkSITA.doc.

[9] The 3rd Generation Partnership Project (3GPP) is a collaboration agreement that was established in December 1998. The collaboration agreement brings together a number of telecommunications standards bodies which are known as "Organizational Partners." The current Organizational Partners are ARIB, CCSA, ETSI, ATIS, TTA, and TTC. The technical specification development work within 3GPP is accomplished by Technical Specification Groups (TSGs) according to the principles and rules contained in the Project reference documentation. The TSG Radio Access Network (TSG-R) is responsible for the UTRAN, including its internal structure, of systems based on 3GPP specifications. Specifically it has a responsibility for Radio aspects of Terminal Equipment and UTRAN functions (FDD & TDD), requirements and interfaces. The TSG GSM/EDGE Radio Access Network

partner in the OnAir venture – Airbus -- has been working with EASA[10] with regard to certification of onboard systems. SITA and its partners thus bring extensive experience and a global perspective to this proceeding, and can assist the Commission in coordinating this proceeding with all of those other safety, technical and regulatory activities that are taking place in other parts of the world.

II. SITA's Overarching Goals for this Proposed Service

SITA, as an airline industry-owned company, not surprisingly has as its primary concern with regard to use of onboard handsets the objective of ensuring that such usage will not create a risk of interference to air safety or navigation. As the Commission recognizes in the *Notice,* in the United States the FAA has primary responsibility for air safety and is actively reviewing this issue through RTCA.[11] SITA urges the Commission to continue to work

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(TSG-GERAN) is responsible for the radio access part for GERAN specifications. Specifically it has a responsibility for GERAN Radio aspects, and interfaces. Additional information concerning 3GPP can be found at its website: http://www.3gpp.org/Default.htm.

[10] EASA is an independent European Community body with a legal personality and autonomy in legal, administrative and financial matters. Its tasks are: to assist the European Commission in preparing aviation safety legislation, and support the Member States and industry in putting the legislation into effect; to adopt its own certification specifications and guidance material, conduct technical inspections and issue certificates where centralized action is more efficient; and to assist the European Commission in monitoring the application of European Community legislation. *See generally*, http://www.easa.eu.int/home/.

[11] *E.g., Notice* at ¶ 3. Moreover, other countries' aviation regulatory bodies will also need to approve the onboard picocells or similar technologies in order for airlines to deploy these systems and make these services

together with the FAA and to note the FAA's review of its current rules restricting onboard use of handsets and other PEDs.[12] At the same time, in light of the progress to date at the FAA and RTCA, SITA encourages the Commission to move on a parallel track with this proceeding rather than awaiting the conclusion of the FAA proceedings so that services can be promptly initiated once the potential airline safety issues are resolved. While the Commission should be wary of being too far in front on these issues, the public interest would likely suffer if this proceeding delayed the availability of these valuable services.

SITA is fully participating in the RTCA activities, and along with its partner in OnAir – Airbus – has conducted numerous studies, tests and demonstrations to gauge the effectiveness of various technologies for eliminating the risk of interference to navigation systems. SITA has shared the results of these activities with the other members of the RTCA, as well as reviewed the other parties' contributions to the RTCA process. While additional testing and review is still necessary, SITA believes the results to date demonstrate that it should be possible to allow passengers to use their own handsets or other PEDs in a controlled manner onboard aircraft in flight

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available. Indeed, aircraft even on domestic flights may overfly several nations' airspace so there is a need for harmonized policies among the various regulatory bodies in different nations.

[12] The FAA restrictions on PEDs are set forth at 14 C.F.R. §§ 91.21, 121.306, 125.204 and 135.144.

without creating safety risks. Use of an onboard transceiver system with a "leaky cable" antenna running through the passenger compartment and a network control device – together referred to as an "onboard pico cell" system in the *Notice*[13] – allows the operator to control the passengers' handsets to operate at minimal power levels or to cease transmitting altogether.[14]

SITA has developed such an onboard picocell system, which is discussed in greater detail below. Importantly, in this manner the risk of interference to the aircraft's navigation systems from onboard handset usage can be eliminated, thus ensuring that the use of passengers' handsets during flight will not impose a risk to aircraft safety. In any event, a system will not be allowed to operate on any aircraft if it cannot be certified for operation by the FAA and other air safety regulators. This is, in effect, a binary restriction.

While airline safety is SITA's primary concern, SITA also agrees that the avoidance of interference to terrestrial services is a critical objective for this proceeding. SITA operates terrestrial (and satellite) radio stations in the United States and many other nations, and as a result fully appreciates the

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[13] *Notice* at ¶¶ 13-21.

[14] Under current procedures, the Captain or crew will make an announcement that use of PEDs is prohibited, but a passenger may nonetheless accidentally leave their handset turned on. The use of an active control system as part of the picocell thus prevents potential harmful interference to the aircraft's systems or to terrestrial networks better than current procedures can ensure.

importance of protecting licensees from harmful interference. Thus, as SITA explained in its previous comments to the Commission in the air-to-ground rulemaking, the Commission should not take action in this proceeding that would jeopardize either of these critical concerns.[15] Importantly, the ability of the onboard system operator to control the passengers' handsets appears to eliminate the risk of harmful interference to terrestrial wireless operators in addition to providing the needed degree of protection to the aircraft's navigation and communications systems. A well engineered system will meet both of these goals.

Finally, the Commission must recognize that all of the affected regulatory bodies both within and outside the United States must approve of the onboard picocells or other similar technologies in order for this service to proceed, in light of the global nature of the airline industry. The Commission cannot act unilaterally (or even just with the FAA) to authorize these services. Thus, the Commission should monitor these other activities to ensure that a globally-harmonized set of regulatory requirements develops. As explained further below, the Commission should also adopt an approach to licensing that reflects international Convention-based law and is therefore determined by the country of registration of the relevant aircraft.

III. Description of SITA's Proposed Operations

The SITA system provides a visited network access (*i.e.,* roaming) for

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[15] *E.g.,* Reply Comments of SITA in WT Docket No. 03-103, filed October 23, 2003 at p. 1.

passengers wishing to make or receive mobile communications while onboard aircraft during the cruise phases of flight. In terms of connectivity, the system is currently designed to accommodate calls placed by GSM handsets, but can be enhanced to support other wireless air interface standards as well. In the SITA design, the system consists of a picocell onboard the aircraft connected, via a satellite link, to a ground switching center. This in turn connects to the external world for roaming related signaling, routing of short message services, routing of calls, and the transfer of data.

The airborne picocell operates as a "conventional" cell, but it includes, in addition to the equipment necessary to facilitate the satellite link, an additional piece of equipment identified as a network control unit ("NCU") used to control transmissions by onboard handsets. Thus, the onboard picocell system incorporates two distinct functionalities – connectivity and control.

SITA believes that the "control" function should apply across different technologies and over different frequencies in order that passengers' electronic devices do not cause harmful interference to the aircraft's navigation or communications systems or to terrestrial wireless networks. Incorporating such a robust capability is important because the airline crew will not be able or expected to monitor and police the operation of individual passenger devices depending on the modulation scheme or frequency range of the device. Under SITA's system, the NCU will operate across the frequency

bands in use within the region that the aircraft is operating in, and will control devices using disparate air interfaces.[16] With respect to the "connectivity" function, SITA believes that the market should dictate whether there is likely to be sufficient demand from a particular interface (*e.g.*, CDMA, GSM, WiFi) or frequency (*e.g.*, cellular, PCS, SMR) so as to justify incorporating a communications capability for that type of device.

In order to comply with airworthiness certification requirements, the onboard picocell would be providing service to the passengers allowing them to make or receive calls during the top of ascent, cruise and commencement of descent phases of the flight.[17] These stages of the flight where passengers'

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[16] The *Notice* at ¶ 16 raises a question about what happens if there is a failure in the picocell and whether the Commission's Rules need to address the risk of the passengers' handsets then starting to seek terrestrial systems. Under SITA's system, this question raises two possibilities. The first is a failure of the connectivity function. In those circumstances, the NCU would nevertheless continue to function and prevent passengers' handsets from trying to access external networks. The second is a failure of the NCU. In these circumstances, the connectivity function would also shut down, the Captain or crew would be alerted to this and would then make an announcement that passengers were required to turn off all PEDs. Thus, in the event of a failure of the control function, the risk of harmful interference would be mitigated in exactly the same manner as occurs currently, through a prohibition on use of passenger handsets.

[17] Consistent with FAA requirements, SITA would restrict calls during initial ascent and end of descent stages to minimize risk of interference with the aircraft's navigation systems. The NCU/control functionality would operate at the same time as the "connectivity" function (*i.e.,* above 10,000 feet/3000 meters), and the current practice of prohibiting use of any PED during the other times would continue to serve as the means of preventing harmful interference to the aircraft's navigation and communications systems, as well as to terrestrial wireless networks.

transmissions would be permitted would be defined when the aircraft is not less than 10,000 feet (3,000 meters) above sea level. FAA and international aviation rules refer to this as the altitude above which the crew can become involved in non-critical activities.[18]

As an additional safety measure, the system incorporates an "override" functionality that the pilot or crew can activate. If the pilot or crew makes any safety-related announcements, they can cut off the connectivity to the handsets so that the passengers' calls will not prevent them or their seatmates from hearing the announcements. The NCU control function would be undisturbed. This feature is an enhancement over the current air-to-ground systems, even though it will not provide an override for other PEDs (such as MP3 players) that passengers can use today.

To meet both aviation safety and telecommunications requirements it is essential that the radio frequency ("RF") environment on board the aircraft be carefully controlled. The NCU plays a critical role in this process. SITA recognizes that it is important that the terrestrial networks are screened from harmful interference caused by the airborne network. More importantly, the onboard avionics must be protected from the onboard

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[18] *E.g.,* 14 C.F.R. §§ 121.542 and 135.100. From a spectrum-engineering viewpoint this minimum altitude limit not only restricts handset transmissions during the most critical phases of the flight, but also provides a useful buffer zone for the fall off of emission power levels between airborne and terrestrial systems so as to reduce even further the interference potential of the onboard usage.

transceiver and the passengers' handsets, and this is best accomplished by ensuring that all of the transmitting devices are operating at minimum power levels.

Within Europe, the NCU will radiate low-level "white noise" in the GSM900 (921-960 MHz), GSM 1800 (1805-1880 MHz) and UMTS2000 (2110-2170 MHz) bands to prevent any terrestrial networks operating in these bands from being visible to the passengers' handsets inside the aircraft.[19] Within the United States, the NCU would operate across the cellular and PCS bands, with the capability to operate in other bands if necessary.[20] Although the Commission's current restriction on onboard handset usage applies only to cellular phones, SITA believes that the ability of the onboard system to control handsets must apply across all relevant frequencies (and all relevant interface modulations) in order to protect the aircraft navigation and communications systems, as well as terrestrial networks. The potential harmful interference is not limited to just the cellular bands, or to any

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[19] White noise is proposed so as not to make the system vulnerable to the 3GPP work on enhancing the performance of GSM and UMTS next generation antennas based on Gaussian based interferers. SITA is also currently evaluating the need during flights over Europe to radiate low-level "white noise" in the 450 MHz band as well, depending on deployment of systems using these frequencies.

[20] By connecting with the GPS capabilities of the aircraft, SITA's onboard picocell system will be able to vary the frequencies and technologies controlled by the NCU depending on the terrestrial systems that will be operating in the country being overflown by the aircraft.

particular modulation scheme.[21]

SITA's tests have indicated that absent such robust control by the NCU, terrestrial networks can be visible in a number of circumstances while an aircraft is in-flight and during all phases of flight. Without the NCU, a subscriber handset from onboard the aircraft in-flight attempting to log in to the terrestrial signal could be disruptive to both the ground network and the aircraft's systems. Moreover, the passenger's handset does not necessarily have to "see" a signal from the terrestrial network that is sufficiently strong to establish a good connection – the onboard handset needs merely to recognize the ground network and attempt a connection for harmful interference potentially to occur. Indeed, when the terrestrial signal is relatively weak the attempts by the passenger handset to log in will likely do so at near to maximum power, presenting a potential threat to the airplane's avionics and to terrestrial networks.

The white noise will be radiated by the NCU at a carefully calibrated power value, just sufficient to prevent visibility of the terrestrial networks to onboard handsets. The power level for the white noise will vary between bands depending on the strength of the external signal, with the NCU system making adjustments based on the aircraft's altitude. As a result of this white

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[21] With regard to the connectivity capability of the onboard systems, SITA believes that the system operators will incorporate the ability to provide service using a particular technology based on demand, and hence the marketplace (and not the Commission) will dictate which interfaces will be accommodated.

noise, the handsets will attempt any communications with the onboard picocell instead of any terrestrial networks that might be in range of the aircraft. The onboard passenger handsets will be able to communicate with the onboard picocell at very low power levels given the proximity to the picocell's antenna,[22] and likewise the picocell will need very little power to communicate with the handsets. The low power levels of the handset transmissions and the onboard transceiver in turn will eliminate the risk of harmful interference to both the aircraft's avionic systems and terrestrial networks.

The system requires use of an NCU to protect terrestrial networks, because the practical level of physical "screening" of signals within the aircraft will not, by itself, provide sufficient protections against harmful interference to terrestrial networks.[23] Actual flight tests have shown that without the use of the NCU, it is possible to detect terrestrial systems from onboard an aircraft during all phases of flight. If the airborne mobile has this visibility, as noted above it can then attempt to log on to a terrestrial system,

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[22] The carrier signal will be transmitted by means of a "leaky cable" antenna, and it is unlikely that any passengers will be more than three meters from that cable, greatly reducing the power necessary to provide contiguous coverage within the aircraft.

[23] While in theory an airplane fuselage could be designed to provide the necessary level of physical screening of RF signals, such an aircraft would have no windows, very limited doors (making emergency deplanements impossible), and/or require the use of exceedingly heavy and expensive materials. In sum, such a plane would never be built for commercial passenger service.

which may cause difficulties for the many terrestrial systems within range of the handset transmitting at high altitude, as well as potentially posing a threat to the aircraft's systems.

In theory, there are a number of possible ways to address this, including a combination of physical shielding and white noise generation. The current attenuation of the aircraft fuselage, according to tests carried out by SITA and Airbus, can be as low as 10 dB. Other independent studies from, for example, Telenor, have come up with similar figures on aircraft they have tested.[24] Additional physical screening of aircraft windows would provide some attenuation of the signal, but according to Airbus' tests this attenuation provides as low as 10 dB effective additional attenuation. In addition, these tests have shown that it is not possible to provide uniform physical screening, especially around the window and door seals and joints. Certainly the attenuation is not large enough to provide the 40 dB protection required. SITA thus proposes "electromagnetic screening" via an NCU to solve the terrestrial network visibility issue. The relatively low signal power received in the fuselage from terrestrial networks means that only a low power is required to mask those terrestrial signals within the aircraft. The NCU can thus electromagnetically "seal" the aircraft to terrestrial networks, while at the same time being operated at a low enough power so as not to

[24] *See, e.g.*, OnAir/Airbus Submission to RTCA, No. SE7 (05)73; Airbus Submission to RTCA, No. SE7 (05)40; and Telenor Submission to RTCA, No. SE7 (05)48.

interfere with any terrestrial networks or the aircraft's avionics.

For connectivity purposes, a number of carrier signals will be required to be transmitting at a power level above the noise floor (voice traffic and GPRS require, as a minimum, the carrier signal to be 9dB above the floor level). Moreover, the onboard carrier signals for connectivity purposes will only be a narrow frequency band, and SITA's current system design is composed of only five conventional GSM (200 KHz) channels in the 1800 MHz band. Even where additional carriers are necessary to support other technologies such as CDMA, under SITA's design the connection to the satellite will limit onboard capacity. This will also assist in managing signal strengths to avoid harmful interference to terrestrial systems from the onboard picocells or passenger handsets. Moreover, as noted above, the onboard system will only be operational above not less than 10,000 feet/3,000 meters, which provides for additional attenuation of the signals, and will thereby provide an even greater margin of protection to prevent harmful interference between the onboard transmissions and the terrestrial systems. This combination of physical and electronic shielding, minimum altitudes, use of minimum power and control of the handsets will ensure that there is no harmful interference from the onboard picocell or use of passengers' handsets to the airplane's navigation or communications systems, or to terrestrial wireless networks.

The SITA design will use a satellite link to connect the onboard

picocell with the ground network, which in turn will provide interconnection to the PSTN, SITA's terrestrial network and the Internet. Because the satellite link operates in different spectrum than the terrestrial cellular and PCS networks, the transmissions between the aircraft and the ground will not cause any harmful interference to those terrestrial networks. In addition, the aeronautical satellite service has already been found by the FAA not to cause any problems with the aircraft's navigation or communications systems, and has been successfully utilized by SITA and others.

The *Notice* seeks comment on use of the 800 MHz cellular spectrum for the communications link between the in-flight aircraft and the ground.[25] Such an architecture has been used by AirCell, at least on a limited basis pursuant to a waiver granted by the Commission.[26] SITA is not in a position to evaluate the extent to which AirCell's particular design has worked in terms of reliability or prevention of harmful interference to terrestrial networks. SITA's system uses satellite links because the reliability and non-interference have been proven, as well as because of the ubiquity of satellite coverage (a critical factor for international flights).

IV. The Public Interest will be Well-Served by Allowing Onboard use of Handsets

SITA believes that the Commission's proposal to allow passengers to

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[25] *Notice* at ¶¶ 22-26.

[26] *AirCell, Inc.,* 15 FCC Rcd 9622 (2000).

use their handsets onboard aircraft in-flight will well serve the public interest, if such operations will not cause harmful interference to the airplane's navigation or communications systems, or to terrestrial wireless networks. As described in the previous section, SITA has developed a system that affords the requisite protection from harmful interference. At the same time, the new services made possible by such systems will provide near seamless connectivity to airline passengers, and serve a presently unfulfilled demand. SITA and its partners (along with several other companies) have not expended significant resources developing these technologies because of idle curiosity or a desire to experiment with new technologies – SITA's internal market studies have shown a significant demand for in-flight connectivity that is not being met at present.[27] While some in flight passenger services have been provided via air-to-ground services or aeronautical satellite services using seatback phones, the expansion of passenger service to allow use of the subscribers' handsets while onboard an airplane will make airline passenger offerings much more convenient and much more efficient, as well as allowing for connectivity to (as well as from) the passengers while in flight. Indeed, given that airlines are increasingly relying on passengers carrying such mobile phones to communicate with the

[27] SITA's market studies included "desk" research on the mobile and air transport markets, focus groups and interviews with a random sample of air travelers.

passengers about schedule changes, etc., to send electronic boarding passes to passengers and to facilitate payment, it is an anomaly that passengers are then prohibited from using the phones onboard the aircraft.

In comparison to the proposed use of the passenger's own handset, existing aircraft phones are unfamiliar devices to most passengers. Moreover, the current phones are capable of making outgoing calls only, and are relatively expensive -- in addition to a set-up charge, calls with the current systems cost as much as $3 to $10 per minute. Current use of in-seat aircraft telephony is less than one call per flight. By contrast, under SITA's new picocell-based system, mobile phone users will be able to use their personal devices for both outgoing and incoming calls, and they will be able to pay for the call through their regular mobile operator with invoicing based on international roaming rates. Equally important, by providing connectivity to passengers' data devices (*e.g.*, Blackberry or other similar PDAs), these new services will provide two-way e-mail connectivity in flight that current systems do not offer.[28] SITA believes there is significant demand for these various services. Based on its internal market studies, SITA estimates the addressable market for onboard service via picocells on both long and short haul flights will be over 700 million passengers by 2009 and that the value

[28] From the airline's perspective, use of the passengers' own handsets is more efficient because there will be no need for internal wiring for the seatback phones and the weight of the necessary equipment and wiring will be reduced.

for onboard communications will be $1.6 billion for voice and $400 million for data.

Wireless subscribers have grown accustomed to the many positive rewards of seamless connectivity, and the proposed use of handsets onboard airplanes extends those benefits to airborne travelers. Subscribers gain peace of mind knowing that they can be reached instantly by family or business associates in case emergencies or other important matters arise. Conversely, the subscriber can instantly alert others of changes in plans or schedules, such as delayed arrivals or flights diverted to another airport.[29] Airline travel these days is already stressful enough as a result of added security and delays – the ability to reduce a traveler's level of stress by enhancing connectivity advances the public interest. Moreover, productivity can be enhanced because a business traveler will be able to maintain contact with colleagues or clients during the flight via voice or e-mail/messaging. Thus, there will be economic gains for the country as well as personal benefits for passengers from implementation of these services.

At the same time, SITA does not believe that there are any drawbacks to allowing the use of passengers' handsets or other PEDs onboard airplanes. As described above, a properly designed system will not pose a risk of harmful interference to the aircraft's avionics or to terrestrial systems –

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[29] As the Commission observes in the *Notice*, such connectivity will also benefit homeland security to the extent that communications options are increased for public safety and homeland security personnel. *Notice* at ¶ 2.

indeed, SITA contends that such a demonstration of non-interference to terrestrial systems must be a pre-condition to Commission rule modifications to allow such services. In light of the extremely low power levels at which the handsets and on-board picocell will operate, there is no RF health issue.

Finally, while both Commissioner Copps and some commenters have expressed some concern about "annoying seatmates,"[30] SITA believes those worries are greatly exaggerated. Cellular and PCS subscribership in the United States has exploded – there are now some 180 million customers in the U.S. – and people have adapted to public use of cellphones. SITA fully expects that cellphone etiquette will be observed onboard airplanes. Moreover, SITA assumes that airlines will respond to the desires of the passengers (both those seeking connectivity and those seeking solitude), and if there is sufficient demand for solitude the airlines can establish "quiet zones" within the aircraft (or even "quiet flights."). Alternatively, the airlines could restrict communications service during certain times of the flights, or could restrict service to data/messaging capabilities during portions of a flight. Likewise, airlines will only install these onboard systems if there is sufficient demand for connectivity from passengers. Thus, SITA views this as a "marketplace" issue.

In addition to the role of the airlines, technology already is also

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[30] Separate Statement of Commissioner Copps in WT Docket No. 04-435 at p. 2.

available to passengers (*e.g.*, noise canceling headphones) that responds to individuals' desire for silence on board airplanes. Finally, as a "backstop" the pilot and the crew retain the authority under FAA regulations (and the ability via the cut off functionality designed into the system) to control the passengers' handset usage if it disrupts the functioning of the crew or disturbs the passengers' seatmates.

V. Proposed Regulatory Model

The Commission seeks comments on the licensing rules that should apply to any onboard picocells.[31] SITA urges the Commission to adopt a regulatory model for onboard picocells that takes into account the unique character of aircraft that can travel both domestically and internationally on constantly changing routes. Moreover, the airplanes may be registered in other countries, and passengers on any flight may be from several different nations. Attempting to shoehorn such "multinational" services into the current cellular and PCS regulatory regime is likely to stifle deployment of these beneficial services. There is also an international aviation regulatory regime to consider. In order to accommodate all of these complicating factors, and as described in greater detail below, SITA urges the Commission to provide for separate, secondary licensing of picocells for onboard operation on U.S.-registered aircraft in flight (and a streamlined registration/notification procedure for foreign-registered aircraft).

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[31] *Notice* at ¶¶ 17-19.

A. The Need for a Somewhat Unique Licensing Regime

The *Notice* posits several potential licensing schemes for operation of onboard picocells, including extending the terrestrial licensees' rights to aircraft in flight[32] or allowing others to operate picocells under a secondary market arrangement (*e.g.*, spectrum lease).[33] SITA contends that both of these alternatives are impractical and unnecessary. To state the obvious, an airplane in flight is moving very rapidly and quickly passing over the geographic licensing area of any particular cellular or PCS licensee.[34] In addition, the same plane may fly numerous different routes over the course of a day, and may be shifted to a completely different route or sets of routes on a near instantaneous basis.

Under these conditions, it would be difficult, if not impossible, to require an airplane's picocell to operate under a terrestrial license either directly or on a secondary market/spectrum lease basis. On any particular

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[32] *Notice* at ¶ 17.

[33] *Notice* at ¶ 18.

[34] Although the Commission's current restriction of on-board use of handsets is limited to cellular handsets, SITA believes that the same rules and requirements should apply to PCS handsets as well. All PEDs, including PCS handsets, are subject to FAA restrictions because of the potential for harmful interference to the airplane's navigation and communications systems. In addition, both cellular and PCS handsets raise the same issues with regard to potential harmful interference to terrestrial networks if used onboard an aircraft in flight – the propagation characteristics for PCS transmissions are not significantly different than cellular transmissions. SITA thus assumes that the rules adopted in this proceeding will apply to both cellular and PCS handsets. *Cf., Notice* at ¶ 21.

flight, the aircraft will pass through numerous geographic licensing territories within a matter of minutes. In addition, over the course of a few days the same airplane may fly on numerous different routes. Indeed, even assuming the same plane flies between the same two cities on a regular basis, the route the plane will take will vary, depending on weather, direction of landing and take-off, etc. Given these inevitable but irregular variations, the "moving" picocell will travel over a constantly changing set of licensees' territories. Moreover, the NCU portion of the picocell will need to operate across the entire bands of cellular and PCS in order to be able to "control" all of the handsets in order to prevent harmful interference to the aircraft's navigation or communications systems, or to terrestrial wireless networks.

Thus, under the proposed model of the terrestrial licensees' operating the picocell in the "airspace" above the licensees' territory, there would need to be a constantly shifting "consortium" of licensees on a minute-by-minute basis as the aircraft moves along its flight path, with a potentially entirely different set of licensees when the airplane operates on a different route (or gets re-directed around a thunderstorm on one of its "normal" routes). Nor would it be possible to turn the picocell transmissions for particular frequencies on and off as the plane moved through different terrestrial licensees' territories depending on whether the particular licensee for that band in that territory was a member of the "consortium," insofar as it will be necessary to use the NCU portion of the picocell to control all of the

passengers' cellular and PCS handsets during the duration of the flight in order to prevent harmful interference.

SITA does not believe it would be possible to implement such a complex and convoluted licensing scheme to control operations for the picocells providing service to aircraft in flight. While the proposal for a third party licensee operating under a secondary market arrangement would theoretically put a single entity in control of the picocell operations, given the variation in the territories overflown by an airplane it would presumably be necessary for such a third party operator to negotiate a spectrum lease with every PCS and cellular licensee in the country in order to ensure that the picocell could operate over all the bands wherever the plane could fly. Under these circumstances, a few "holdouts" seeking to extort excessive payments could jeopardize implementation of the service, because as noted above, the picocells would need to operate across all of the bands, and the airplanes' flights could take them virtually anywhere within the United States.[35] Thus, SITA does not believe that a mandatory "spectrum lease" regulatory model for third party licensing of picocell operations would be workable.

Equally important, SITA believes it is not necessary to tie the licensing of onboard picocells to terrestrial cellular and PCS licensees either directly or via spectrum leases because a properly designed onboard picocell will not

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[35] Indeed, the licensing may be further complicated because even domestic flights can be routed to overfly other countries' airspace and international flights may spend considerable time in U.S. airspace. Licensing of foreign aircraft is discussed *infra* at pp. 29-31.

degrade or restrict the terrestrial operators' services in any manner. As explained above (and as a predicate to allowing onboard use of passengers' handsets), picocells that control onboard usage of passengers' handsets will prevent harmful interference to terrestrial networks. Terrestrial operators need not set aside any spectrum for these aeronautical services, nor need they worry about their capacity being degraded by the moving picocells as they overfly the licensees' airspace. Nor would the NCUs' control of the handsets interfere with the terrestrial licensees' provision of service to those handsets, because the terrestrial licensee would not otherwise provide service to handsets in flight due to the current Commission restrictions and the FAA regulations pertaining to PEDs. Thus, the third party's operations would not even impinge on the terrestrial carriers' "opportunity costs" because there would be no "poaching" of potential calls.

Indeed, terrestrial carriers would be advantaged under SITA's proposed picocell operations insofar as the picocell would be treated as a roaming activity. Under this model, the third party operator would negotiate roaming agreements with terrestrial operators at commercially agreeable terms.[36] If a carrier chooses not to participate in a roaming arrangement,

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[36] SITA believes that the picocell operator should have some basis for the establishment of a relationship with the terrestrial carriers' customers in connection with furnishing them service, which could be either a roaming agreement or a spectrum lease. While the task of negotiating secondary market arrangements with all PCS and cellular licensees is formidable, a picocell operator could adopt that business model -- rather than a roaming arrangement -- as an alternative. Under this approach, presumably the third

then its subscribers' phones would not be able to make or receive calls onboard an aircraft in flight, but the NCU would nevertheless prevent the handset from attempting to connect with a terrestrial network (and thus risk harmful interference to the aircraft or to terrestrial networks). Thus, no terrestrial licensee would have a "veto" over airborne picocell operations and no opportunity to attempt to extract excessive "holdout" payments.

On the other hand, if the third party operator and the terrestrial licensee are able to negotiate a roaming agreement, then the terrestrial licensee will be able to extend its customers' ability to obtain service where it had previously been unavailable. Both the third party operator and the terrestrial licensees will have a common goal of maximizing this new potential revenue pool by extending service to airplane passengers, and so will share an incentive to negotiate a commercially reasonable roaming arrangement. The regulatory model posited by SITA is thus a "win-win" for terrestrial licensees and third party operators, as well as meeting subscriber demands for near seamless connectivity during airplane flights (making it a "win-win-win" situation).

B. General Nature of Licenses

In order to make clear that the picocell operators may not cause harmful interference to terrestrial networks, SITA suggests that the

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party operator would make lease payments to the terrestrial carriers and retain all of the revenues from passengers' calls. Because of the problems described above, however, a spectrum lease model should not be mandatory.

Commission license third party operators under a secondary status. Under this approach, the picocell would need to be carefully designed to avoid the creation of harmful interference to terrestrial networks, while being engineered to operate without interference protection from terrestrial systems operating consistent with their licenses and Commission regulations.[37] Secondary license status is well understood and so should minimize any disputes over responsibility for avoiding and/or eliminating harmful interference.[38]

In a different proceeding, the Commission has been examining whether to permit additional, non-interfering operations based on an

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[37] Harmful interference to picocells operating onboard airplanes from other picocells onboard other aircraft should not be a concern. Because the FAA will ensure that picocell operations will not interfere with the onboard aircraft navigation or communication systems, *a fortiori* the picocells will not interfere with adjacent aircraft navigation or communications systems. Moreover, the exceedingly low power of the picocells (in combination with the shielding provided by the fuselage) would require that an adjoining picocell be within the wingspan of the aircraft for potential harmful interference to the picocell communications to occur. Aircraft in flight will not be that close (or if they are, then interference to the picocell communications would be the least of their worries).

[38] *E.g.,* 47 C.F.R. § 2.104(d) (3) Stations of a secondary service:

> (i) Shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date;
> (ii) Cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date; and
> (iii) Can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

"underlay" or "interference temperature" model.[39] Without addressing the merits of those approaches, SITA observes that in the case of properly designed onboard picocells allowing phone calls above 10,000 feet/3,000 meters, there is no risk of harmful interference.[40] Moreover, SITA is not proposing unlicensed operations.

Rather, SITA proposes that the Commission utilize a streamlined, non-exclusive licensing model similar to what the Commission recently adopted for the 3650-3700 MHz band.[41] In that proceeding, the Commission created a new licensing scheme that imposes minimal requirements – electronic license applications and registration procedures.[42] All qualified applicants will be licensed (and statutory foreign ownership restrictions are the only limitation), and the registration process ensures that there will be an up-to-

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[39] *Establishment of an Integrated Interference Temperature Metric to Quantify and Manage Interference and to Expand Available Unlicensed Operation in Certain Fixed, Mobile and Satellite Frequency Bands*, ET Docket No. 030327, FCC 03-289, released November 28, 2003.

[40] See pp. 9-16, *supra*. *Cf.*, *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, WT Docket No. 03-66, FCC 04-135, released July 29, 2004, at ¶¶ 135-137 (declining to allow high power unlicensed "underlay" operations in the 2500-2690 MHz band because the proponents had not demonstrated that they would not cause interference, but did allow low-power unlicensed devices to operate in the band under the current Part 15 rules).

[41] *Wireless Operations in the 3650-3700 MHz Band,* ET Docket No. 04-151, FCC 05-56, released March 16, 2005.

[42] *Id.* at ¶ 29.

date data base to foster coordination among users.[43]

Likewise, with respect to onboard picocells, the non-interfering and non-exclusive nature of these systems renders such a streamlined, minimalist licensing scheme appropriate for this service as well. To the extent there is any lingering concern with harmful interference, the registration process will ensure that the database will reflect each airplane's technical parameters and contact information so that any onboard picocell causing harmful interference can be identified. In this regard, SITA observes that linkage between the aircraft's GPS functionality and the onboard picocell systems (which SITA's system does) will allow for ready identification of airplanes in the area where harmful interference occurs, and those airplanes' systems can then be checked to make sure they are functioning properly.

In the 3650-3700 MHz proceeding, the Commission determined that the database will be maintained by the Commission.[44] In other contexts, the Commission has relied on non-government entities to develop, operate and maintain a similar "registration" database to facilitate coordination and the investigation of harmful interference.[45] If the Commission determines that such a non-government operated database would be appropriate for onboard

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43 *Id.* at ¶ 17.

44 *Id.* at ¶ 32.

45 *E.g., Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, 16 FCC Rcd 4543 (2001).

picocells in light of the dynamic, mobile nature of the systems, SITA is willing to consider operating such a database on behalf of the airline industry.

C. Licensing Details

As explained in the preceding section, SITA contends that the Commission should impose a streamlined, non-exclusive licensing scheme for onboard picocells. SITA suggests that such licenses be nationwide, rather than restricted to any particular route, in light of the likelihood that routes will frequently change. SITA also urges the Commission to allow for "blanket" or "fleet" licensing, along with a registration procedure for individual planes that will use picocell systems. SITA believes this will best comport with the airlines' need to maintain flexibility, and to minimize the need for Commission filings as planes are added to or removed from the airline's or third party operator's fleet. At the same time, the minimally-burdensome registration process will ensure that an accurate, industry operated database is available if any terrestrial network operators experience harmful interference.

SITA strongly believes that the picocell licenses should not be limited to current terrestrial licensees, but should instead be open-ended as to eligibility.[46] The only limits that the Commission should place on licensee

[46] *Cf., Notice* at ¶ 17.

eligibility are the statutory restrictions on foreign ownership set forth in Section 310(b) of the Communications Act.[47] Under this open eligibility, the airline could hold the licenses and operate the onboard picocells itself, or it could choose to allow a third party to run the systems.[48] In any event, the picocell licensee would be responsible for operating the system and ensuring compliance with Commission requirements, including the prevention of harmful interference.

In the case of a foreign airline, SITA believes that the Commission should recognize a license issued by the home country of the airplane without requiring a separate FCC license, although registration with the industry-operated database would remain appropriate, and the operator would still have to comply fully with all of the Commission's technical requirements for onboard picocell systems for the purpose of preventing harmful interference

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[47] 47 U.S.C. § 310(b). As such, the licenses could not be held by a foreign government or the representative of a foreign government, and if a foreign company was providing common carrier services it would need to hold the FCC license indirectly.

[48] The third party operator/licensee could be a terrestrial cellular or PCS licensee, but there is no good reason to limit eligibility to such entities. In the case of a third party operator, the critical relationship is between the airline (which controls access to the aircraft) and the service provider, and the airline should have complete freedom in choosing whether to provide the service itself, or which company it wants to provide service to its passengers if it chooses to use a third party provider. Particularly because the airline retains responsibility for ensuring the safety of flight -- and the onboard picocell supports that critical goal by controlling the passengers' handsets -- the Commission should not limit the airline's discretion in deciding who will operate the onboard picocells by restricting eligibility to current terrestrial cellular or PCS licensees.

to terrestrial networks and eliminating health concerns. Such treatment derives from Articles 30 and 33 of the Chicago Convention and Commission Rules implementing that treaty.[49] It is also consistent with Article 18 of the ITU Radio Regulations. Requiring a license from the Commission in addition to one from the State of Registry of the aircraft would be inconsistent with the current treatment of the State of Registry as the regulatory body with ultimate sovereignty and control over the airplane.[50]

In its separate Notice of Proposed Rule Making in IB Docket No. 05-20 concerning aeronautical earth stations, the Commission suggests, when considering Article 30 of the Chicago Convention, that the Convention does not explicitly prohibit the nation over which a foreign registered aircraft is

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[49] Convention on International Civil Aviation, signed Dec. 7, 1944, Article 30. The Commission has applied this concept to its regulations concerning certain aviation services. Section 87.191(a) of the Commission's Rules provides:

> Aircraft of member States of the International Civil Aviation Organization may carry and operate radio transmitters in the United States airspace only if a license has been issued by the State in which the aircraft is registered and the flight crew is provided with a radio operator license of the proper class, issued or recognized by the State in which the aircraft is registered. The use of radio transmitters in the United States airspace must comply with these rules and regulations.

[50] *Cf., Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service*, FCC 05-14, released February 9, 2005 at ¶ 57 (the Commission's licensing obligation for U.S.-registered aircraft would apply "without concern for the location of the aircraft (*i.e.*, in U.S. airspace, over international waters, or in a foreign administration's airspace)").

flying from also issuing its own license for a transmitter on that aircraft.[51] This claim of the Commission, however, overlooks the provisions of Article 33 of the Convention, which (within the same Chapter of the Convention as Article 30) states that "licenses issued…by the contracting State in which the aircraft is registered shall be recognized as valid by the other contracting States…" The imposition by the Commission of a dual licensing system on foreign registered aircraft would be inconsistent with the terms of this treaty obligation. It would also be contrary to the clear intent of Resolution A29-19 of the ICAO General Assembly,[52] which expressly contemplates that the only licensing required to authorize passenger use of radio transmitting apparatus for non-safety related transmissions while an aircraft is in flight over a third country is a license issued by the State of Registry of the aircraft (or by the State of the operator where Article 83 bis of the Convention applies).

In addition, Commission recognition of the aircraft radio licenses issued by the State of Registry would also be consistent with Commission recognition of foreign-licensed satellites, where such licensees can participate in processing rounds and add their satellites to the Permitted Space Station List, but need not obtain a separate FCC license.[53] Moreover, such treatment

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[51] *Id.,* at fn. 156.

[52] Resolution A29-19 was adopted by the ICAO Assembly in the 28th (Extraordinary) Session of the Assembly held in Montreal October 22-26, 1990, and can be downloaded at: http://www.icao.int/icao/en/res/a29_19.htm.

[53] *E.g.,* 47 C.F.R. 25.137 (c)-(g).

should ultimately benefit U.S. airlines insofar as the alternative – imposing an additional FCC licensing requirement on foreign aircraft – risks triggering a reciprocal licensing obligation on U.S. carriers in order to allow them to provide these services when they fly over other countries. Indeed, that burden on U.S. airlines is likely to be greater in light of the number of countries the planes would overfly in providing overseas flights.

Finally, SITA contends that the licenses issued by the Commission for onboard picocells should not be subject to competitive bidding. Auctions are only required when there is mutual exclusivity – that is, issuance of a license by the Commission precludes another applicant from operating on those same frequencies in the licensee's service area.[54] In light of the non-interfering nature of the systems, there is no limit to the number of licenses the Commission can issue, and the licensees receive no territorial exclusivity (or even protections from interference because they will operate on a secondary basis).[55] Under these circumstances, no auction is necessary.

VI. Conclusion

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[54] *Cf., Wireless Operations in the 3650-3700 MHz Band,* ET Docket No. 04-151, FCC 05-56, released March 16, 2005 at ¶¶ 44-45 (auction is not required for non-exclusive nationwide licenses in the 3650-3700 MHz band because there is no mutual exclusivity).

[55] While presumably there will only be a single system operated onboard each airplane, that is a function of the decision of the airline to control access to the limited space (and weight considerations) onboard the airplane. Moreover, given the airlines' safety of flight obligations, that control over access must remain unfettered.

The Commission has an opportunity in this proceeding to expand the availability of services to passengers onboard airplanes by allowing them to use their own handsets to maintain connectivity during flights. SITA believes that through the use of properly engineered onboard picocells, the passengers can use their own handsets without any risk of harmful interference to the aircraft's navigation or communications systems, or to terrestrial wireless networks. Once such non-interfering operations have been demonstrated, SITA urges the Commission to adopt regulations to permit non-exclusive licenses pursuant to minimally burdensome procedures as described in these comments. SITA believes that such a decision would well serve the public interest.

Respectfully submitted,

/s/

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